

	Drake Refrigeration Inc. TAMS MRI Chiller Order Release	Issue Date 1-20-09 Supersedes 1-20-09
	Schedule Type: Toshiba America Medical Systems Pass Through Chiller Release	
Page: 1 of 1		

Site Name:		OA(Seg)#:
Ship To:	Hospital / CO Name:	
	Street Address:	
	City, State, Zip:	
Site Contact:		Phone:
TAMS Model: <input type="checkbox"/> Vantage <input type="checkbox"/> Titan		
Voltage Required: <input type="checkbox"/> 208-230 / 3 / 60 <input type="checkbox"/> 460 / 3 / 60		
Requested Delivery Date: / /		Lift Gate Required: <input type="checkbox"/> Yes <input type="checkbox"/> No
Toshiba Site Contact:		Phone:

Drake Refrigeration Contact Information

Thank you for purchasing the Drake chiller for your Toshiba MRI project. The following items are included with the purchase of the Drake chiller and will be coordinated with the site contact.

- The customer / customer contractor is responsible for all phases of the chiller installation process. Drake is responsible for scheduling the start up and the 6 month preventative maintenance. See the Installation manual and TAMS site documents for proper installation.
- Drake will have an authorized factory technician perform a complete start up on the chiller and indoor heat exchanger to ensure that the chiller is operating at its peak performance and efficiency. (The start up request form must be filled out and faxed to Drake to initiate the start up of the chiller equipment. Drake requires a two business day notification (weekends and holidays excluded) to ensure the technician's availability. If the start up request form is submitted as ready, and the technician is dispatched to a site that has an incomplete installation, a purchase order will be required for the additional time and /or trip to complete the start up.
- Drake will have an authorized factory technician perform a complete 6 month preventative maintenance on the chiller and indoor heat exchanger to ensure that the chiller is operating at its peak performance and efficiency. This will be coordinated with the site contact and the authorized factory technician to meet the customer's schedule.
- The chiller is shipped with the Drake CHILLERGUARD™. This device will allow internet access to the chiller. Drake will need IP access to the CHILLERGUARD™. Please contact Drake if you would like us to monitor your chiller daily during the warranty period.
- Drake contact information: (888) 289-7299 8am – 5pm Eastern
 - Jim Meiler - jmeiler@drakechillers.com (President, Main contact)
 - Otto Weiss - oweiss@drakechillers.com (Engineering drawings, Technical assistance)
 - Steve Gorman - sgorman@drakechillers.com (Customer service, Schedule start up and 6 month PM, Warranty service, Technical assistance, Replacement parts, Return goods authorization)
 - Matt Guliandolo - mgugliandolo@drakechillers.com (Factory production and shipment schedule)
 - Wayne Ivey - wivey@drakechillers.com (Shipping information)

Special instructions and comments:



Pre start-up installation check list

Fax to (215) 638-5518 when installation up is complete

How to use this form**(PLEASE READ)**

1. This form is to be completed by the installation contractor. It WILL require interaction with the TAMS CE to determine when each of the check items below are completed. **DO NOT FAX THIS FORM IN TO REQUEST STARTUP UNTIL ALL ITEM LISTED BELOW ARE COMPLETED.**
2. Once this form is completed and faxed back to the Drake factory, Drake will request a startup dispatch with a service provider. Once this form is received at the Drake factory, The service provider will normally be on site to perform startup within 48 hours.
3. **IMPORTANT: IN THE EVENT THAT THE START UP TECHNICIAN REPORTS TO YOUR SITE AND THE SYSTEM IS NOT READY, AS THIS FORM INDICATES, THE SITE WILL BE INVOICED FOR A RETURN TRIP AT (MINIMUM OF FOUR HOURS).**
4. Startup of Drake Chillers by non authorized personnel COULD void your manufactures warranty. Startup of the cooling system by non-authorized personnel, could also result in damage to the chiller and MR systems. Should an outside company choose to do so, they take FULL responsibility for any direct or indirect damage to the chiller or MR systems.
5. If you have any questions call 1-888-289-7299

SITE OA (SEG)# ()**ALL INFORMATION NEEDS TO BE COMPLETED**

Installation date:	Installed by:
Chiller model:	Installers ph:
Chiller Serial #:	TAMS zone office:
	TAMS zone office ph:
Name of site:	
Site address:	
TAMS CE:	Cell#:

	Poor	Satisfactory	Good	Excellent
> Overall unit appearance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
> Ease of installation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
> Quality of workmanship	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments:

Heat Exch / Pump assy : Model #

Serial #

Water Manifold : Model #

Serial #

Pre start-up Checklist (Verify these items with the Installing contractor)

EQUIPMENT INSTALLATION (Dual loop chiller)

Yes

- 1) Unit is mounted on a level pad ☐
- 2) The fan discharge is clear of any overhangs ☐
- 3) Electrical wiring to equipment is complete ☐
- 4) Electrical connections conform to local codes ☐
- 5) Voltage to the chiller matches the voltage on name plate ☐
- 6) MR system able to provide load to the chiller ☐
- 7) Condenser is at least 24" from any wall or object ☐
- 8) Remote monitor panel is mounted ☐
- 9) Remote monitor panel CAT5 cable is connected to the chiller panel ☐
- 10) Indoor Heat exchanger is mounted, piped, and wired ☐
- 11) Water manifold is mounted ☐
- 12) Automatic air vent is installed per TAMS schematic ☐

Chiller process water system (Chiller loop)

Yes

- 13) Piping on chiller to indoor heat exchanger is completed and leak tested. (See note) ☐
- 14) Tank and piping system are full of glycol and purged of air ☐

Indoor Heat Exchanger (Distilled water loop)

Yes

- 15) Water piping between Heat exchanger and manifold is completed ☐
- 16) Water piping and hoses are leak free and filled with distilled water ☐
- 17) Wiring from chiller to the indoor heat exchanger is completed per the wiring diagram ☐

NOTE: ***DO NOT PRESSURIZE THE CHILLER OR HEATEXCHANGER WITH COMPRESSED AIR*******

Comments:

Requested Start-Up Date:

Requested by:

Fax to (215) 638-5518 when installation sheet is completely filled in.

Document: Drake Chiller Pass Through for either Titan or Atlas Z (DCPT-Titan Atlas Z-009)

Version: 009

Date: 11-12-09

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Drake 2 Loop Chiller & Heat Exchanger (Drake chiller)

Plumbing Notes:

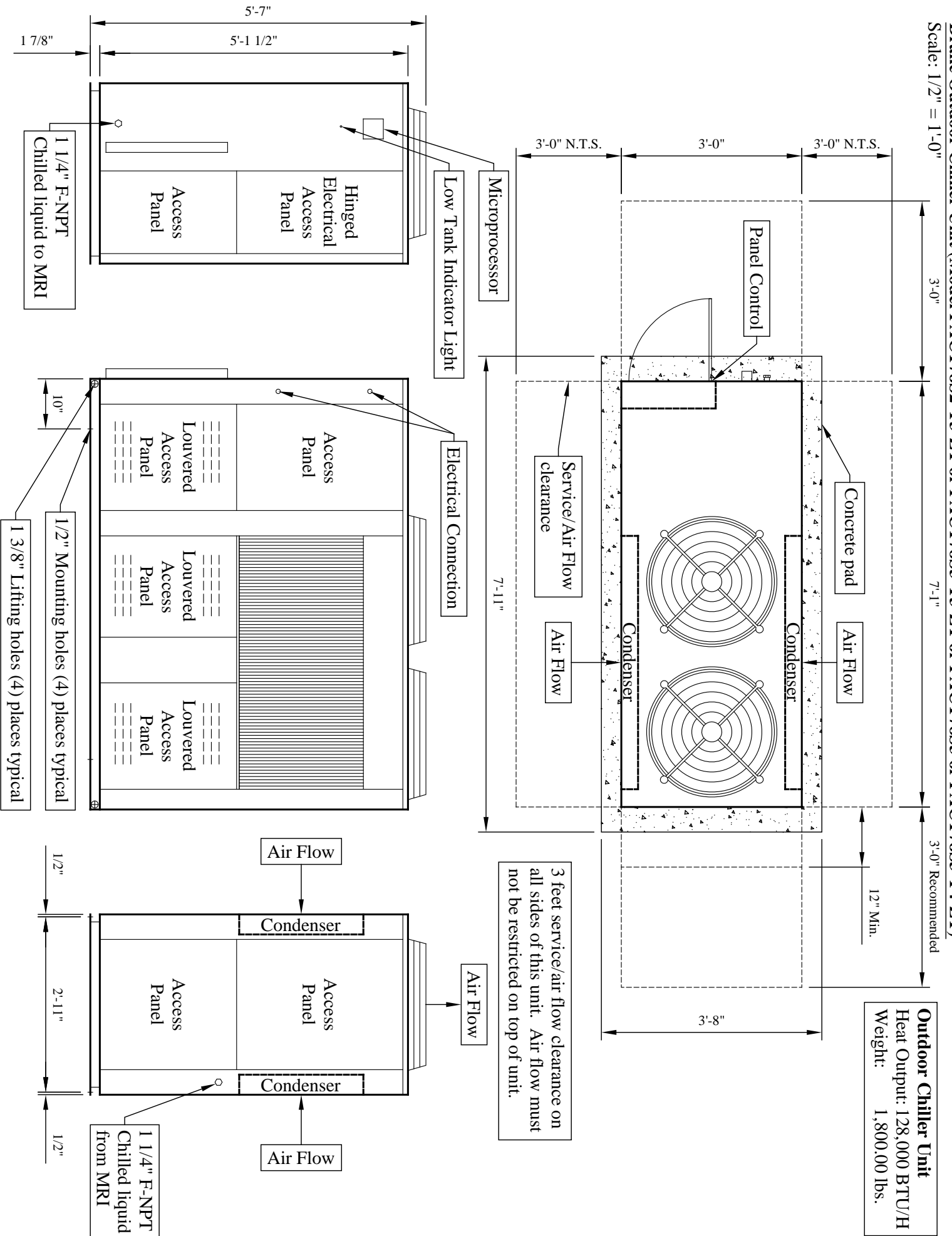
1. It is the customer's responsibility to install the Drake chiller.
2. For a Drake chiller (indoor unit, outdoor unit) the customer's contractor should install the indoor unit in the equipment room and the outdoor unit according to the 2 Loop Chiller & Heat Exchanger Package manual (contact Drake for copy of manual).
3. The customer's contractor will complete all electrical and plumbing (all piping between chiller, manifold and components of the MRI system) as described in the 2 Loop Chiller & Heat Exchanger Package manual.
4. The customer should schedule the Drake chiller start up with Drake. The Drake chiller includes chiller start up and a P.M. on the Drake chiller at 6 months (both of these items are prepaid with each order and scheduled through Drake 888-289-7299.)
5. This Drake chiller has two separate water loops. The first water loop is from the Outdoor Chiller Unit to the Indoor Heat Exchanger. This loop can contain a glycol/water mixture. The second water loop (on the other side of the Indoor Heat Exchanger) must contain distilled water (supplied by customer/contractor).
6. It is the responsibility of the customer's plumber to fill the Drake chiller reservoir and piping with the 60/40 glycol mixture (shipped with each order.) The Drake chiller reservoir and plumbing should hold approximately 80-110 gallons depending on the length of the plumbing run.
7. MRI system can only use distilled water (no glycol allowed) in the second water loop. The Indoor Heat Exchanger dissipates the heat between the two separate water loops and maintains the integrity of the distilled water.
8. Drake chiller start up consists of verifying all connections, starting up and verification of Drake chiller operation.

Structural Notes:

1. Anchoring of Drake chiller is the responsibility of the customer/contractor.
2. Drake chiller pad poured & cured per customer/contractor.

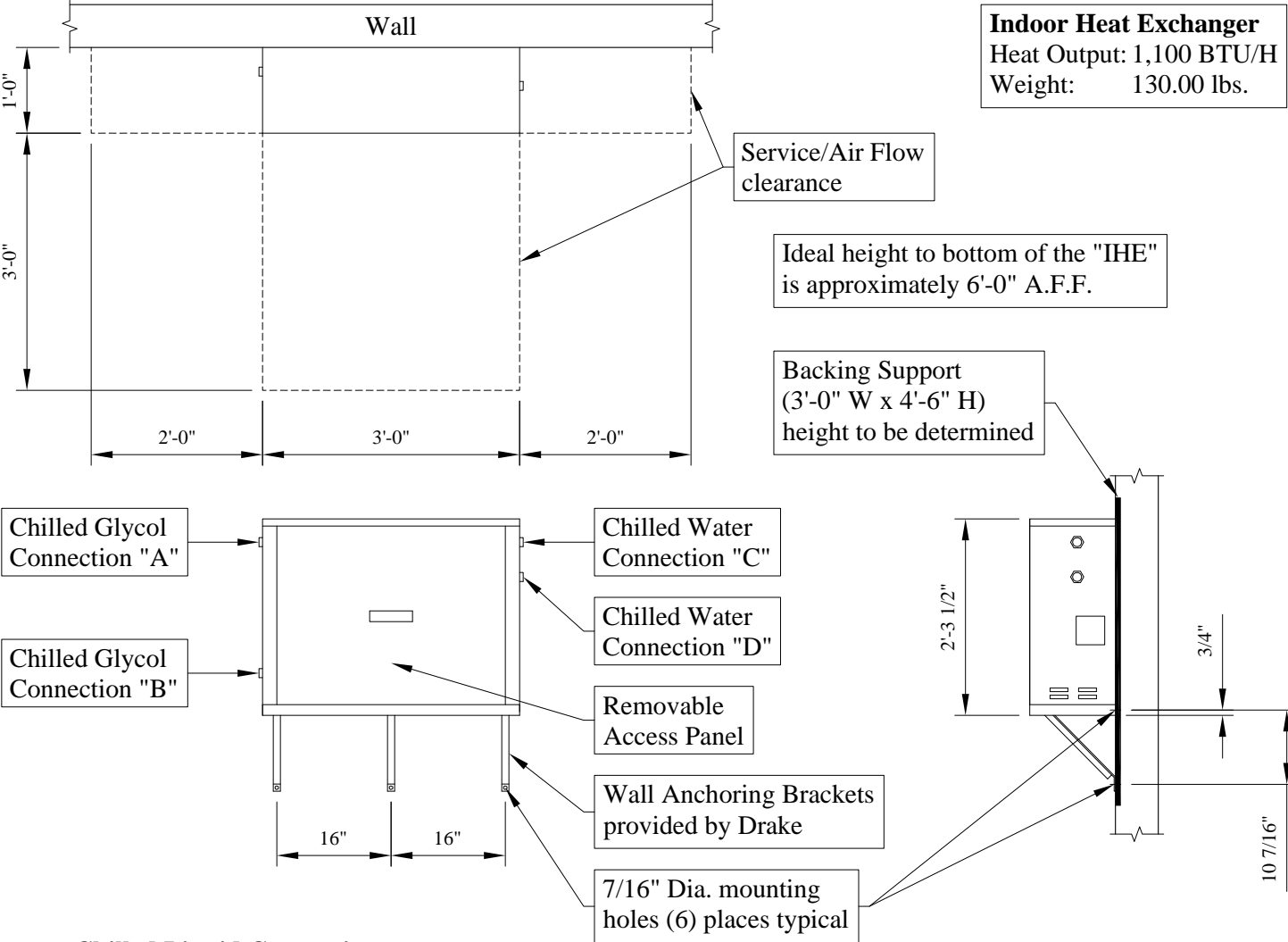
Drake Outdoor Chiller Unit (Model PACT78S2-T3-ZT or PACT78S3-T3-ZT or PACT78S3 or PACT78S3-T4-ZT)
 Scale: 1/2" = 1'-0"

Outdoor Chiller Unit
 Heat Output: 128,000 BTU/H
 Weight: 1,800.00 lbs.



Drake Indoor Heat Exchanger (Model D500-858)

Scale: 1/2" = 1'-0"

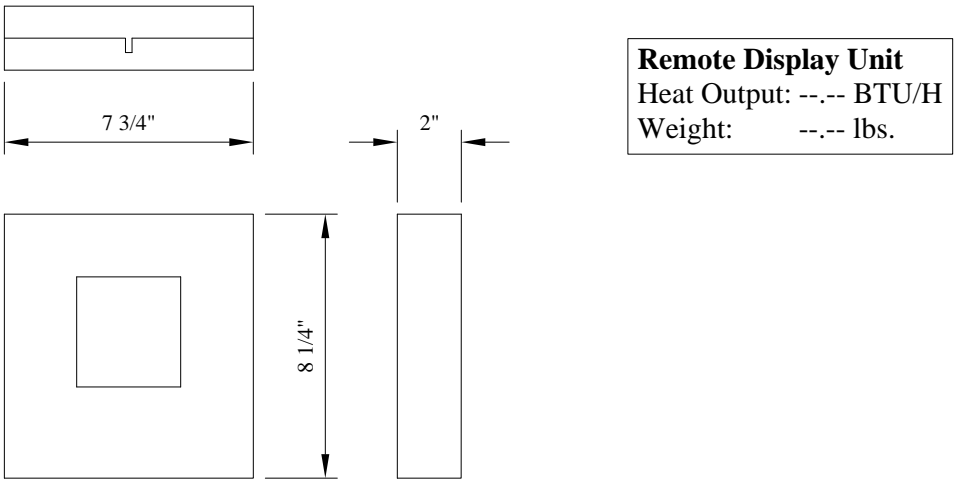


Chilled Liquid Connections

Package used w/ chiller model	A	B	C	D
PACT78S2-T3-ZT PACT78S3-T3-ZT PACT78S3-T4-ZT	Glycol to chiller (1 1/4 FPT)	Glycol from chiller (1 1/4 FPT)	Water from MRI (1 1/4 FPT)	Water to MRI (1 1/4 FPT)

Drake Remote Display Unit

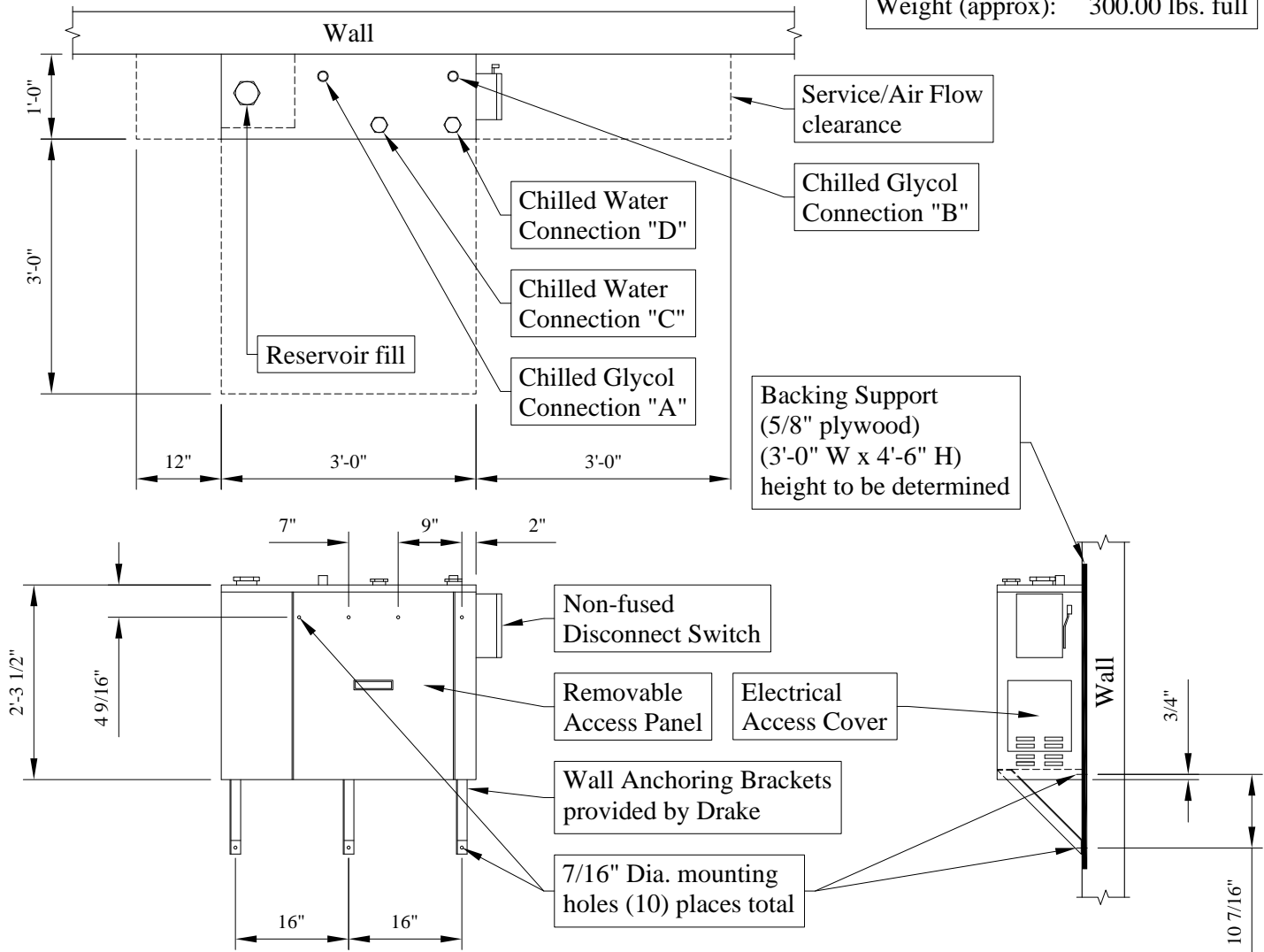
Scale: 2" = 1'-0"



Drake Indoor Heat Exchanger (Model D500-866)

Scale: 1/2" = 1'-0"

Indoor Heat Exchanger
Heat Output: 1,000 BTU/H
Weight (approx): 300.00 lbs. full

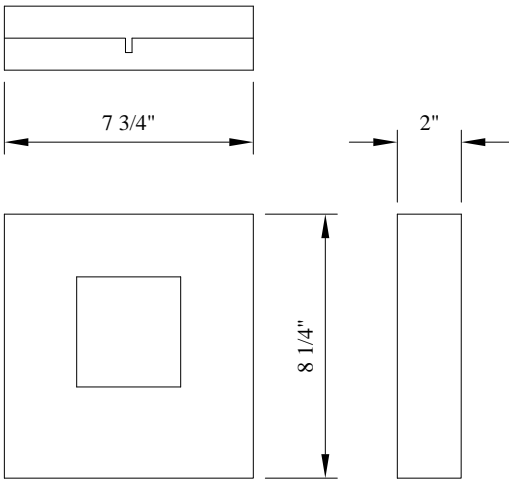


Chilled Liquid Connections

Package used w/ chiller model	A	B	C	D
PACT78S3	Glycol to chiller (1 1/4 MPT)	Glycol from chiller (1 1/4 MPT)	Water from MRI (1 1/4 FPT)	Water to MRI (1 1/4 FPT)

Drake Remote Display Unit




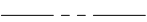


Scale: 2" = 1'-0"

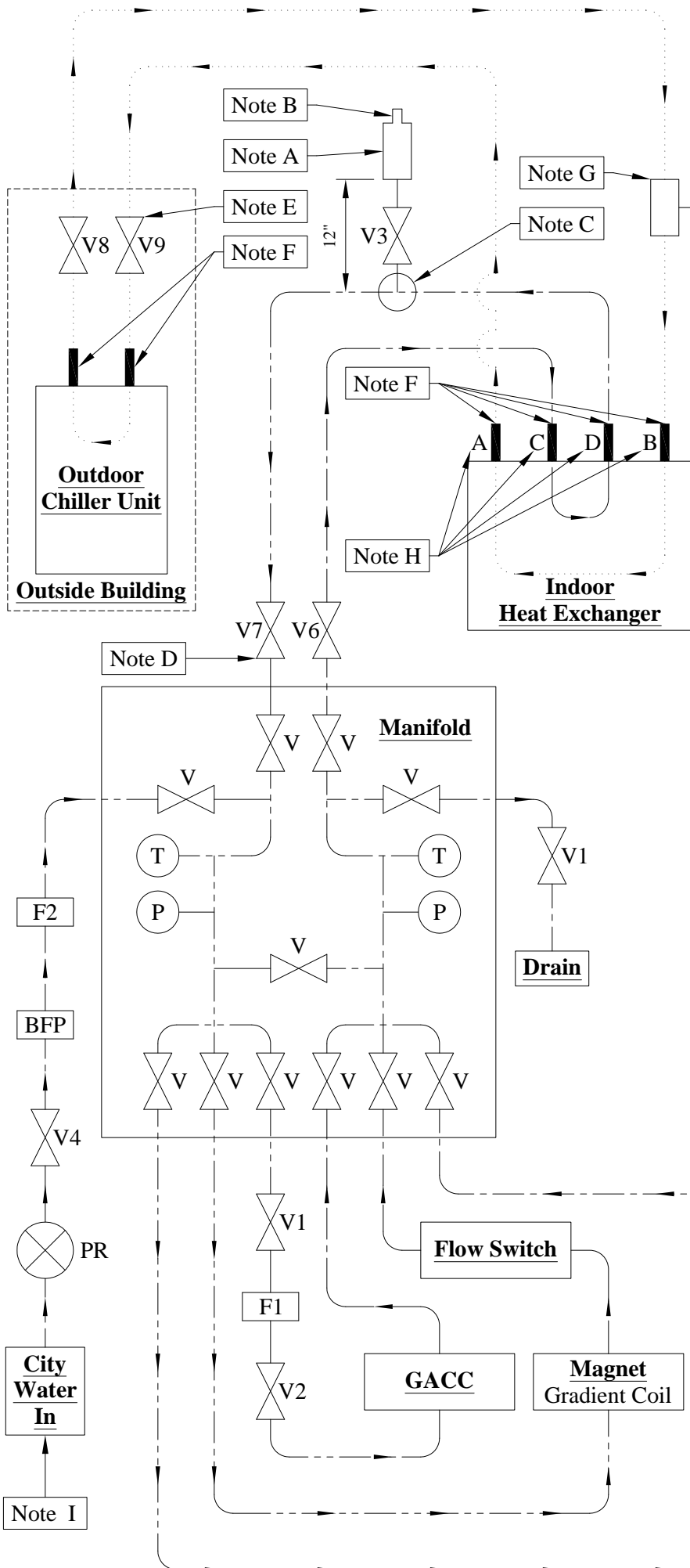


Remote Display Unit
Heat Output: --- BTU/H
Weight: --- lbs.

Plumbing Diagram Legends

Please refer to following page (6 of 10) for Plumbing Diagram

<u>Plumbing Legend</u>	
	Thermometer contained in manifold
	Pressure gauge contained in manifold
FM	Flow meter contained in manifold
F1	Filter provided w/ MRI system and installed by customer/contractor
F2	Filter supplied and installed by customer/contractor
FS	Flow switch provided with MRI system
V	Valves contained within manifold
V1 & V2	Shut off valve provided w/ MRI system and installed by customer/contractor
V3 - V9	Shut off valve supplied and installed by customer/contractor
BFP	Back flow preventer supplied and installed by customer/contractor
PR	Pressure regulator (70 P.S.I. Maximum) supplied and installed by customer/contractor
	100% Distilled water loop (from system)
	100% Distilled water loop (to system)
	Chilled water/Glycol loop (60/40 mixture shipped with system)
	Direction of flow



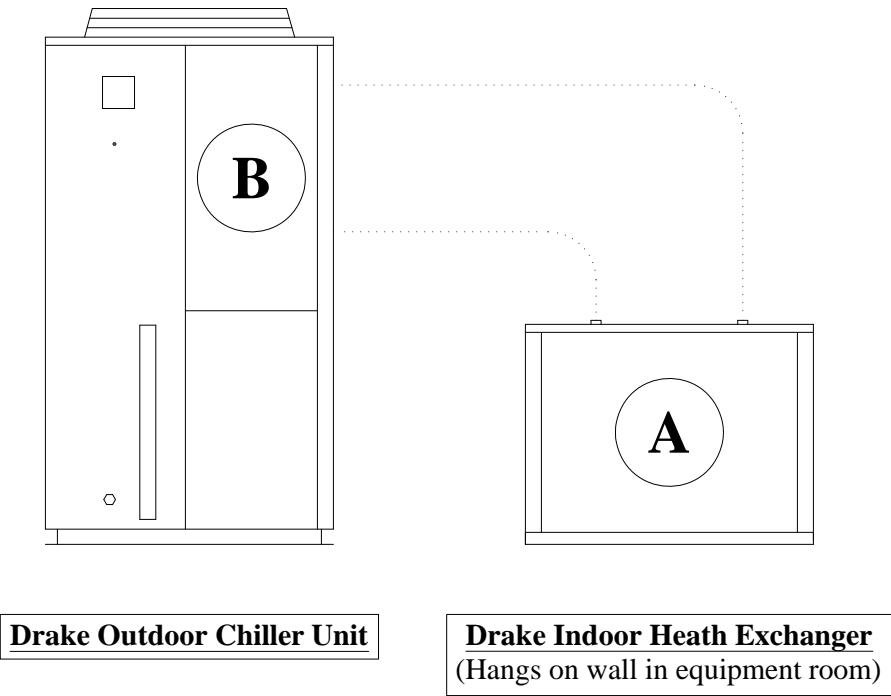
NOTES:

- A. Hoffman 79 Air Vent Valve
 - * Shipped with water manifold to be installed by plumber.
 - * Must be installed at the highest point on chiller water line for venting the trapped air.
 - * Hoffman valve must be installed vertically (with valve output pointing straight up).
 - * Over time, trapped air will vent/monitor water level.
- B. Option (not necessary) connection to drain
- C. Connection at top of horizontal run of pipe
- D. Valves 6 & 7 to be located near manifold
- E. Valves 8 & 9 to be located near OCU
- F. Anti-vibration joints necessary for copper pipe
- G. Hose bib in equipment room
- H. See page 3 for chilled water connections
- I. City water is only for service/maintenance of water cooling. A max. of 70 PSI water pressure and min. of 13.8 GPM flow required. City water must be regulated to not exceed 70 PSI (max.) using customer supplied pressure regulator.

Warning:

The city water input valve on the manifold should only be used to cool the refrigerator in the event of a chiller failure. If city water is applied to the manifold; the drain valve must be open and the valves to the Indoor Heat Exchanger reservoir must be closed. Otherwise a build up of water pressure could cause a leak. Consult you TAMS representative.

Glycol Line Sizing between Outdoor Chiller Unit and Indoor Heat Exchanger



Size	Distance	Lineal Feet	Equivalent Feet
1"	40'-0"	80'-0"	110'-0"
1 1/4"	110'-0"	220'-0"	275'-0"
1 1/2"	240'-0"	480'-0"	600'-0"
2"	960'-0"	1,820'-0"	2,400'-0"

Legend

Distance Physical straight line point "A" to point "B" - Indoor Heat Exchanger to Outdoor Chiller unit (one way).

Lineal Feet The measured length of straight tubing required to pipe between the Outdoor Chiller Unit and the Indoor Heat Exchanger in the supply plus the return lines.

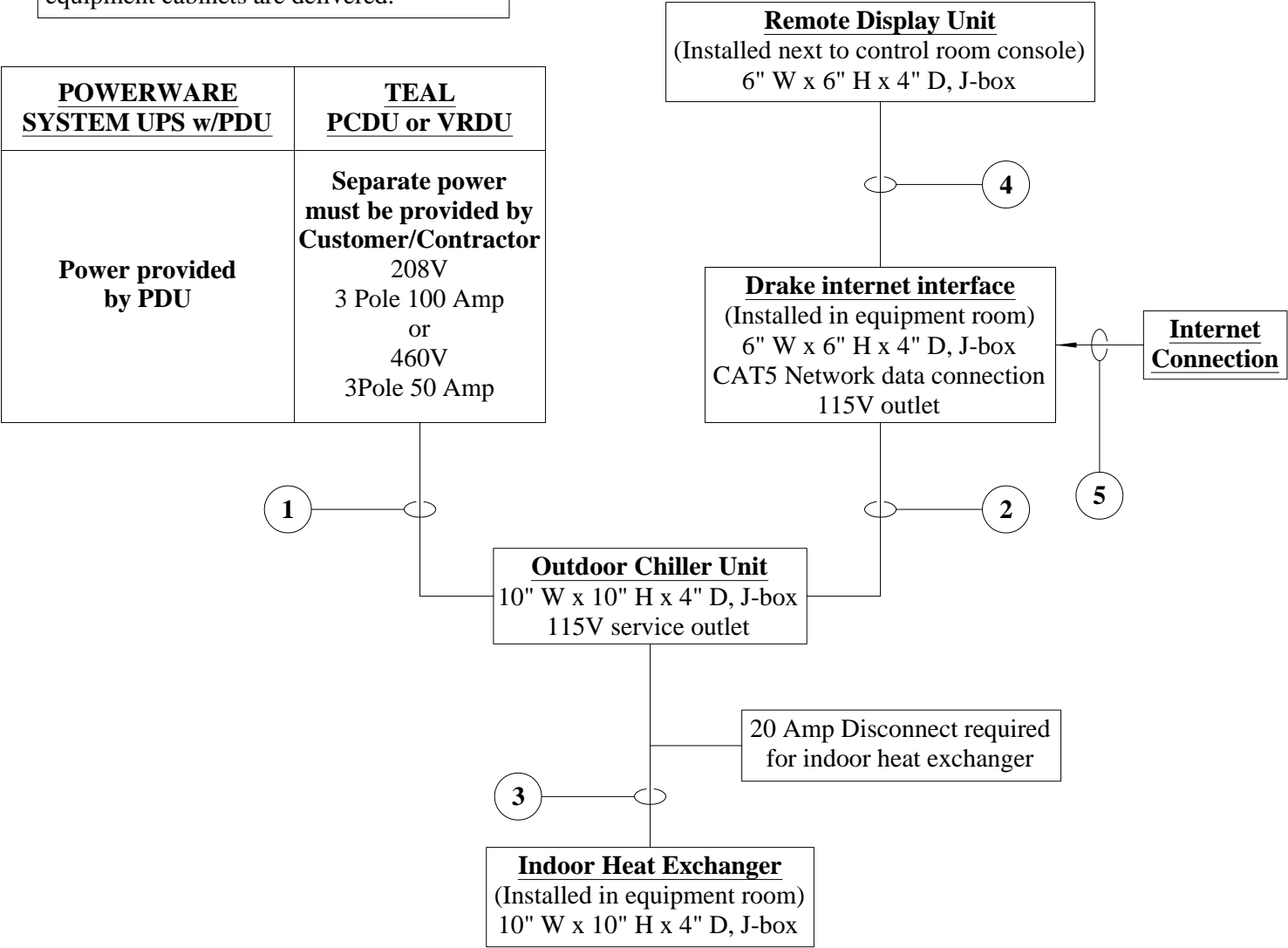
Equivalent Feet Takes into account the frictional losses within a piping system caused by both straight tubing as well as various valves and fittings used within the system.

Note:

1. These lengths are based on using a 40% solution of propylene glycol and water & a flow rate of 17 GPM. For questions, please contact Otto Weiss at Drake (267) 525-3504 [888-289-7299].

Electrical Diagram
PACT78S2-T3-ZT or PACT78S3-T3-ZT or PACT78S3-T4-ZT & D500-858

Note:
Customer/contractor to temporarily provide power for chiller / compressor before MRI equipment cabinets are delivered.



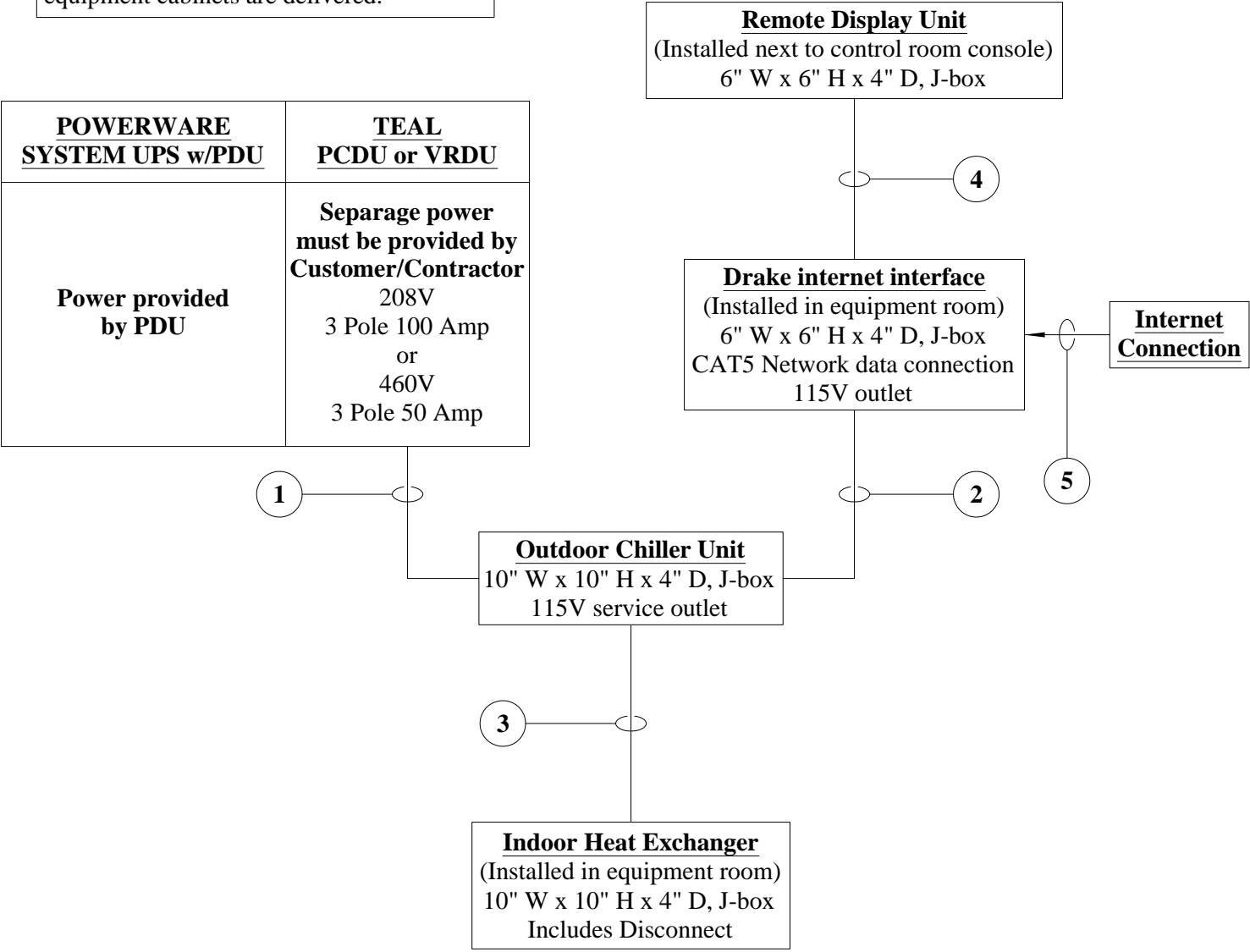
Conduit No.	Conduit Inner Dia.	Cable Length	Cable Provided By
1	Per Code (Power)	Per Code	Customer/Contractor
2	3/4" (CAT-5 Signal)	Per Drake	Drake
3*	3/4" (Power)	Per Site	Contractor
4	3/4" (CAT-5 Signal)	Per Drake	Contractor
5	3/4" (CAT-5 Signal)	Per Site	Contractor

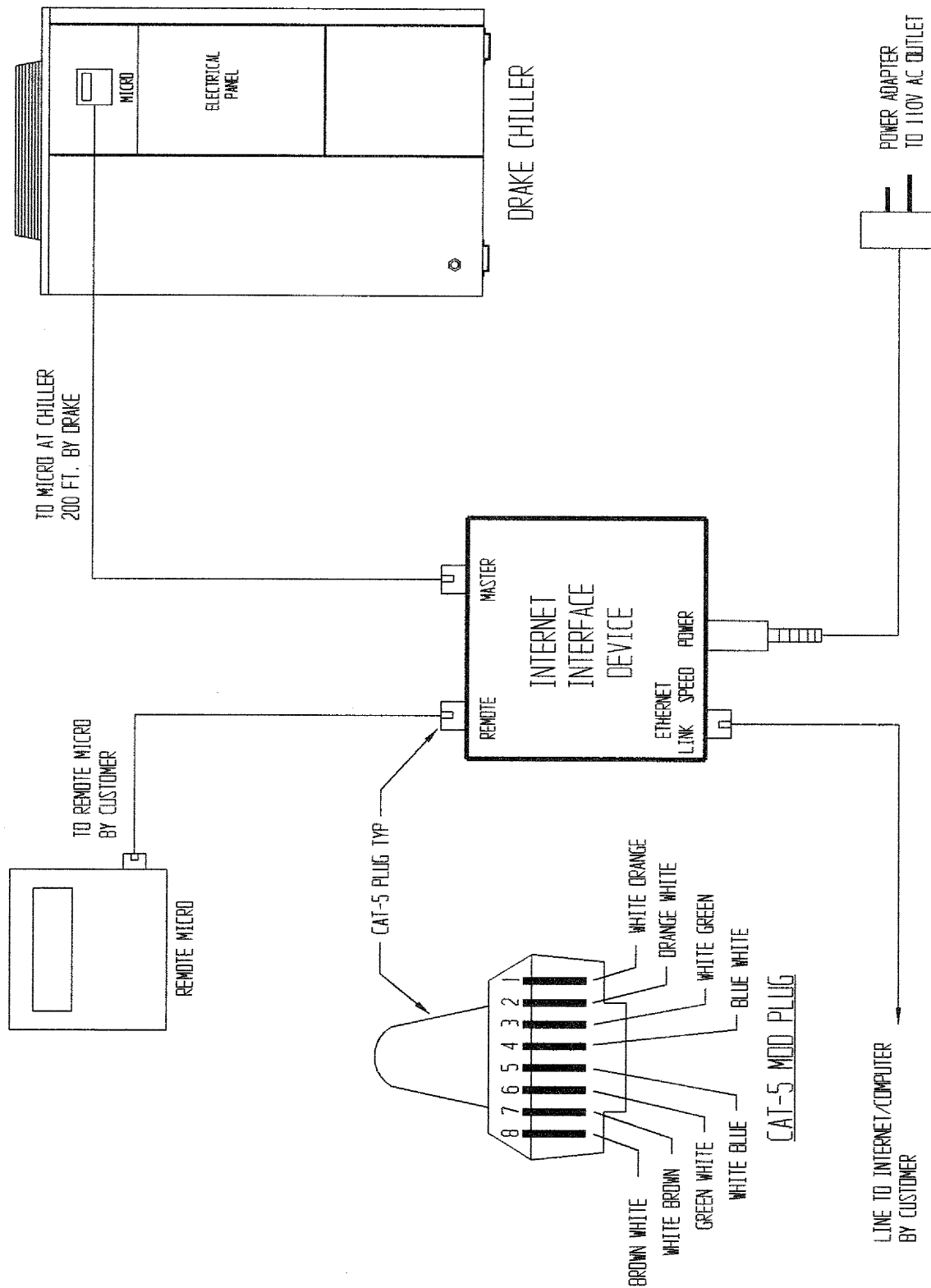
Note: All conduits provided by customer/contractor.

*Refer to 2 Loop Chiller & Heat Exchanger Package manual for exact cable sizes and wiring diagrams.

Electrical Diagram for PACT78S3 & D500-866

Note:
Customer/contractor to temporarily provide power for chiller / compressor before MRI equipment cabinets are delivered.





NOTE: THE CABLE THAT RUNS FROM THE CHILLER/GUARD TO THE CUSTOMER'S PC WILL DEPEND UPON WHETHER IT IS GOING DIRECTLY TO A PC OR THROUGH ANOTHER DEVICE. IF GOING DIRECTLY TO THE USER'S PC THEY WILL NEED A CROSSTOVER CABLE, OTHERWISE USE THE ABOVE STRAIGHT THROUGH CABLE.

PRODUCTION AUTHORIZATION		NO. DATE CHANGE ORDER # DESCRIPTION OF REVISION	
Engineering: _____ Date: _____		INTERNET INTERFACE DEVICE	
Production: _____ Date: _____		INSTALLATION TO MICRO	
TOLERANCES EXCEPT WHERE SPECIFIED FABRICATION DIMENSIONS 1/32"		DATE 9-11-2008	
MACHINING DIMENSIONS		DWG. NO.	
FRACTIONAL 1/64		110-9908	
DECIMAL .005		DRAKE REFRIGERATION, INC.	
ANGULAR 1/2°		SCALE 1/8" = 1"	
CHECKED		DRAWN	

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